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TERMINAL (ENTER 1, 2, 3, OR ?):2


* * * * * * * * * *   Welcome to STN International   * * * * * * * * * *

 NEWS  1         Web Page for STN Seminar Schedule - N. America
 NEWS  2  OCT 02  CA/CAplus enhanced with pre-1907 records from Chemisches
                  Zentralblatt
 NEWS  3  OCT 19  BEILSTEIN updated with new compounds
 NEWS  4  NOV 15  Derwent Indian patent publication number format enhanced
 NEWS  5  NOV 19  WPIX enhanced with XML display format
 NEWS  6  NOV 30  ICSD reloaded with enhancements
 NEWS  7  DEC 04  LINPADOCDB now available on STN
 NEWS  8  DEC 14  BEILSTEIN pricing structure to change
 NEWS  9  DEC 17  USPATOLD added to additional database clusters
 NEWS 10  DEC 17  IMSDRUGCONF removed from database clusters and STN
 NEWS 11  DEC 17  DGENE now includes more than 10 million sequences
 NEWS 12  DEC 17  TOXCENTER enhanced with 2008 MeSH vocabulary in
                  MEDLINE segment
 NEWS 13  DEC 17  MEDLINE and LMEDLINE updated with 2008 MeSH vocabulary
 NEWS 14  DEC 17  CA/CAplus enhanced with new custom IPC display formats
 NEWS 15  DEC 17  STN Viewer enhanced with full-text patent content
                  from USPATOLD
 NEWS 16  JAN 02  STN pricing information for 2008 now available
 NEWS 17  JAN 16  CAS patent coverage enhanced to include exemplified
                  prophetic substances
 NEWS 18  JAN 28  USPATFULL, USPAT2, and USPATOLD enhanced with new
                  custom IPC display formats
 NEWS 19  JAN 28  MARPAT searching enhanced
 NEWS 20  JAN 28  USGENE now provides USPTO sequence data within 3 days
                  of publication
 NEWS 21  JAN 28  TOXCENTER enhanced with reloaded MEDLINE segment
 NEWS 22  JAN 28  MEDLINE and LMEDLINE reloaded with enhancements
 NEWS 23  FEB 08  STN Express, Version 8.3, now available
 NEWS 24  FEB 20  PCI now available as a replacement to DPCI
 NEWS 25  FEB 25  IFIREF reloaded with enhancements
 NEWS 26  FEB 25  IMSPRODUCT reloaded with enhancements
 NEWS 27  FEB 29  WPINDEX/WPIDS/WPIX enhanced with ECLA and current
                  U.S. National Patent Classification


 NEWS EXPRESS FEBRUARY 08 CURRENT WINDOWS VERSION IS V8.3,
              AND CURRENT DISCOVER FILE IS DATED 20 FEBRUARY 2008

 NEWS HOURS    STN Operating Hours Plus Help Desk Availability
 NEWS LOGIN    Welcome Banner and News Items
 NEWS IPC8     For general information regarding STN implementation of IPC 8

Enter NEWS followed by the item number or name to see news on that
specific topic.
```

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* * * * * * * * * * * * * * * STN Columbus * * * * * * * * * * * * * * * *

FILE 'HOME' ENTERED AT 20:49:26 ON 30 MAR 2008

=> index bioscience
FILE 'DRUGMONOG' ACCESS NOT AUTHORIZED
COST IN U.S. DOLLARS                              SINCE FILE      TOTAL
                                                       ENTRY    SESSION
FULL ESTIMATED COST                                     0.21       0.21

INDEX 'ADISCTI, ADISINSIGHT, ADISNEWS, AGRICOLA, ANABSTR, ANTE, AQUALINE,
       AQUASCI, BIOENG, BIOSIS, BIOTECHABS, BIOTECHDS, BIOTECHNO, CABA, CAPLUS,
       CEABA-VTB, CIN, CONFSCI, CROPB, CROPU, DDFB, DDFU, DGENE, DISSABS, DRUGB,
       DRUGMONOG2, DRUGU, EMBAL, EMBASE, ...' ENTERED AT 20:49:48 ON 30 MAR 2008

69 FILES IN THE FILE LIST IN STNINDEX

Enter SET DETAIL ON to see search term postings or to view
search error messages that display as 0* with SET DETAIL OFF.

=> s anaerobic(p)degrad? and humic(p)acid? and electron(p)accept? and halogen?
          0*  FILE ADISNEWS
          0*  FILE ANTE
          0*  FILE AQUALINE
          0*  FILE BIOENG
          0*  FILE BIOTECHABS
          0*  FILE BIOTECHDS
          0*  FILE BIOTECHNO
  13 FILES SEARCHED...
          1   FILE CAPLUS
          0*  FILE CEABA-VTB
          0*  FILE CIN
  23 FILES SEARCHED...
          1   FILE DISSABS
          0*  FILE ESBIOBASE
          0*  FILE FOMAD
          0*  FILE FOREGE
          0*  FILE FROSTI
          0*  FILE FSTA
          2   FILE IFIPAT
          0*  FILE KOSMET
          0*  FILE NTIS
  44 FILES SEARCHED...
          0*  FILE NUTRACEUT
          0*  FILE PASCAL
          0*  FILE PHARMAML
  60 FILES SEARCHED...
          8   FILE USPATFULL
          1   FILE USPAT2
          0*  FILE WATER
          1   FILE WPIDS
          1   FILE WPINDEX

   7 FILES HAVE ONE OR MORE ANSWERS,   69 FILES SEARCHED IN STNINDEX

L1    QUE ANAEROBIC(P) DEGRAD? AND HUMIC(P) ACID? AND ELECTRON(P) ACCEPT? AND HA
```

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        LOGEN?

=> file caplus dissabs ifipat uspatfull uspat2
COST IN U.S. DOLLARS                               SINCE FILE      TOTAL
                                                        ENTRY    SESSION
FULL ESTIMATED COST                                      3.25       3.46

FILE 'CAPLUS' ENTERED AT 20:52:53 ON 30 MAR 2008
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2008 AMERICAN CHEMICAL SOCIETY (ACS)

FILE 'DISSABS' ENTERED AT 20:52:53 ON 30 MAR 2008
COPYRIGHT (C) 2008 ProQuest Information and Learning Company; All Rights Reserved.

FILE 'IFIPAT' ENTERED AT 20:52:53 ON 30 MAR 2008
COPYRIGHT (C) 2008 IFI CLAIMS(R) Patent Services (IFI)

FILE 'USPATFULL' ENTERED AT 20:52:53 ON 30 MAR 2008
CA INDEXING COPYRIGHT (C) 2008 AMERICAN CHEMICAL SOCIETY (ACS)

FILE 'USPAT2' ENTERED AT 20:52:53 ON 30 MAR 2008
CA INDEXING COPYRIGHT (C) 2008 AMERICAN CHEMICAL SOCIETY (ACS)

=> s l1
L2          13 L1

=> rem dup l2
DUP IS NOT VALID HERE
The DELETE command is used to remove various items stored by the
system.

To delete a saved query, saved answer set, saved L-number list, SDI
request, batch request, mailing list, or user-defined cluster, format,
or search field, enter the name.  The name may include ?  for left,
right, or simultaneous left and right truncation.

Examples:

  DELETE BIO?/Q          - delete query names starting with BIO
  DELETE ?DRUG/A         - delete answer set names ending with DRUG
  DELETE ?ELEC?/L        - delete L-number lists containing ELEC
  DELETE ANTICOAG/S      - delete SDI request
  DELETE ENZYME/B        - delete batch request
  DELETE .MYCLUSTER      - delete user-defined cluster
  DELETE .MYFORMAT       - delete user-defined display format
  DELETE .MYFIELD        - delete user-defined search field
  DELETE NAMELIST MYLIST - delete mailing list

To delete an ordered document or an offline print, enter its
number.

Examples:

  DELETE P123001C        - delete print request
  DELETE D134002C        - delete document order request

To delete an individual L-number or range of L-numbers, enter the
L-number or L-number range.  You may also enter DELETE LAST followed
by a number, n, to delete the last n L-numbers.  RENUMBER or
NORENUMBER may also be explicitly specified to override the value of
SET RENUMBER.
```

Examples:

```
DELETE L21            - delete a single L-number
DELETE L3-L6          - delete a range of L-numbers
DELETE LAST 4         - delete the last 4 L-numbers
DELETE L33-           - delete L33 and any higher L-number
DELETE -L55           - delete L55 and any lower L-number
DELETE L2-L6 RENUMBER - delete a range of L-numbers and
                        renumber remaining L-numbers
DELETE RENUMBER       - renumber L-numbers after deletion of
                        intermediate L-numbers
```

Entire sets of saved items, SDI requests, batch requests, user-defined items, or E-numbers can be deleted.

Examples:

```
DELETE SAVED/Q - delete all saved queries
DELETE SAVED/A - delete all saved answer sets
DELETE SAVED/L - delete all saved L-number lists
DELETE SAVED   - delete all saved queries, answer sets,
                 and L-number lists
DELETE SAVED/S - delete all SDI requests
DELETE SAVED/B - delete all batch requests
DELETE CLUSTER - delete all user-defined clusters
DELETE FORMAT  - delete all user-defined display formats
DELETE FIELD   - delete all user-defined search fields
DELETE SELECT  - delete all E-numbers
DELETE HISTORY - delete all L-numbers and restart the
                 session at L1
```

To delete an entire multifile SDI request, enter DELETE and the name of the request. To delete a component from the multifile SDI, enter DELETE and the name of the component.

```
=> dup rem l1
L1 IS NOT VALID HERE
This L-number was created by another command that cannot be used with
the DUPLICATE command. Enter DISPLAY HISTORY at an arrow prompt (=>)
to see all L-numbers defined in this session.

=> rem dup l2
DUP IS NOT VALID HERE
The DELETE command is used to remove various items stored by the
system.
```

To delete a saved query, saved answer set, saved L-number list, SDI request, batch request, mailing list, or user-defined cluster, format, or search field, enter the name. The name may include ? for left, right, or simultaneous left and right truncation.

Examples:

```
DELETE BIO?/Q        - delete query names starting with BIO
DELETE ?DRUG/A       - delete answer set names ending with DRUG
DELETE ?ELEC?/L      - delete L-number lists containing ELEC
DELETE ANTICOAG/S    - delete SDI request
DELETE ENZYME/B      - delete batch request
DELETE .MYCLUSTER    - delete user-defined cluster
DELETE .MYFORMAT     - delete user-defined display format
DELETE .MYFIELD      - delete user-defined search field
```

```
  DELETE NAMELIST MYLIST - delete mailing list
```

To delete an ordered document or an offline print, enter its number.

Examples:

```
  DELETE P123001C        - delete print request
  DELETE D134002C        - delete document order request
```

To delete an individual L-number or range of L-numbers, enter the L-number or L-number range. You may also enter DELETE LAST followed by a number, n, to delete the last n L-numbers. RENUMBER or NORENUMBER may also be explicitly specified to override the value of SET RENUMBER.

Examples:

```
  DELETE L21            - delete a single L-number
  DELETE L3-L6          - delete a range of L-numbers
  DELETE LAST 4         - delete the last 4 L-numbers
  DELETE L33-           - delete L33 and any higher L-number
  DELETE -L55           - delete L55 and any lower L-number
  DELETE L2-L6 RENUMBER - delete a range of L-numbers and
                          renumber remaining L-numbers
  DELETE RENUMBER       - renumber L-numbers after deletion of
                          intermediate L-numbers
```

Entire sets of saved items, SDI requests, batch requests, user-defined items, or E-numbers can be deleted.

Examples:

```
  DELETE SAVED/Q - delete all saved queries
  DELETE SAVED/A - delete all saved answer sets
  DELETE SAVED/L - delete all saved L-number lists
  DELETE SAVED   - delete all saved queries, answer sets,
                   and L-number lists
  DELETE SAVED/S - delete all SDI requests
  DELETE SAVED/B - delete all batch requests
  DELETE CLUSTER - delete all user-defined clusters
  DELETE FORMAT  - delete all user-defined display formats
  DELETE FIELD   - delete all user-defined search fields
  DELETE SELECT  - delete all E-numbers
  DELETE HISTORY - delete all L-numbers and restart the
                   session at L1
```

To delete an entire multifile SDI request, enter DELETE and the name of the request. To delete a component from the multifile SDI, enter DELETE and the name of the component.

```
=> dup rem l1
L1 IS NOT VALID HERE
This L-number was created by another command that cannot be used with
the DUPLICATE command.  Enter DISPLAY HISTORY at an arrow prompt (=>)
to see all L-numbers defined in this session.

=> rem dup l1
DUP IS NOT VALID HERE
The DELETE command is used to remove various items stored by the
system.
```

To delete a saved query, saved answer set, saved L-number list, SDI request, batch request, mailing list, or user-defined cluster, format, or search field, enter the name. The name may include ? for left, right, or simultaneous left and right truncation.

Examples:

```
DELETE BIO?/Q          - delete query names starting with BIO
DELETE ?DRUG/A         - delete answer set names ending with DRUG
DELETE ?ELEC?/L        - delete L-number lists containing ELEC
DELETE ANTICOAG/S      - delete SDI request
DELETE ENZYME/B        - delete batch request
DELETE .MYCLUSTER      - delete user-defined cluster
DELETE .MYFORMAT       - delete user-defined display format
DELETE .MYFIELD        - delete user-defined search field
DELETE NAMELIST MYLIST - delete mailing list
```

To delete an ordered document or an offline print, enter its number.

Examples:

```
DELETE P123001C        - delete print request
DELETE D134002C        - delete document order request
```

To delete an individual L-number or range of L-numbers, enter the L-number or L-number range. You may also enter DELETE LAST followed by a number, n, to delete the last n L-numbers. RENUMBER or NORENUMBER may also be explicitly specified to override the value of SET RENUMBER.

Examples:

```
DELETE L21            - delete a single L-number
DELETE L3-L6          - delete a range of L-numbers
DELETE LAST 4         - delete the last 4 L-numbers
DELETE L33-           - delete L33 and any higher L-number
DELETE -L55           - delete L55 and any lower L-number
DELETE L2-L6 RENUMBER - delete a range of L-numbers and
                        renumber remaining L-numbers
DELETE RENUMBER       - renumber L-numbers after deletion of
                        intermediate L-numbers
```

Entire sets of saved items, SDI requests, batch requests, user-defined items, or E-numbers can be deleted.

Examples:

```
DELETE SAVED/Q - delete all saved queries
DELETE SAVED/A - delete all saved answer sets
DELETE SAVED/L - delete all saved L-number lists
DELETE SAVED   - delete all saved queries, answer sets,
                 and L-number lists
DELETE SAVED/S - delete all SDI requests
DELETE SAVED/B - delete all batch requests
DELETE CLUSTER - delete all user-defined clusters
DELETE FORMAT  - delete all user-defined display formats
DELETE FIELD   - delete all user-defined search fields
DELETE SELECT  - delete all E-numbers
DELETE HISTORY - delete all L-numbers and restart the
                 session at L1
```

```
To delete an entire multifile SDI request, enter DELETE and
the name of the request.  To delete a component from the
multifile SDI, enter DELETE and the name of the component.

=> dup rem l2
PROCESSING COMPLETED FOR L2
L3            9 DUP REM L2 (4 DUPLICATES REMOVED)

=> d l3 1-9

L3   ANSWER 1 OF 9  IFIPAT  COPYRIGHT 2008 IFI on STN  DUPLICATE 1
AN     11217300  IFIPAT;IFIUDB;IFICDB
TI     ANAEROBIC BIOLOGICAL DEGRADATION OF HYDROCARBONS
IN     Ballerstedt Hendrik (NL); Gerritse Jan (NL); Langenhoff Alette Anna Maria
       (NL); Rijnaarts Hubertus Henricus Martinus (NL)
PA     Unassigned Or Assigned To Individual (68000)
PPA    Nederlandse Organisatie Voor Toegepast Natuurwetenschappelijk Onderzock
Tno NL (Probable)
PI     US 2006166348   A1  20060727
AI     US 2003-527409      20030912
       WO 2003-NL632       20030912
                           20051227  PCT 371 date
                           20051227  PCT 102(e) date
PRAI   NL 2002-1021458     20020913
FI     US 2006166348       20060727
DT     Utility; Patent Application - First Publication
FS     CHEMICAL
       APPLICATION
ED     Entered STN: 27 Jul 2006
       Last Updated on STN: 27 Jul 2006
CLMN   10

L3   ANSWER 2 OF 9  USPATFULL on STN
AN      2005:295238  USPATFULL
TI      Plant-fiber containing composition for anaerobic bioremediation
IN      Hince, Eric Christian, Campbell Hall, NY, UNITED STATES
        Singer, Jennifer Ann, Goshen, NY, UNITED STATES
PA      Geovation Technologies, Inc., Florida, NY, UNITED STATES (U.S.
        corporation)
PI      US 6967099          B1  20051122
AI      US 1999-440340          19991115 (9)
DT      Utility
FS      GRANTED
LN.CNT 1222
INCL    INCLM: 435/262.500
        INCLS: 435/243.000; 435/264.000
NCL     NCLM:  435/262.500
        NCLS:  435/243.000; 435/264.000
IC      [7]
        ICM    B09B003-00
        ICS    C12N001-00; D06M016-00
        IPCI   B09B0003-00 [ICM,7]; C12N0001-00 [ICS,7]; D06M0016-00 [ICS,7]
        IPCR   B09C0001-10 [I,C*]; B09C0001-10 [I,A]; C02F0001-68 [N,C*];
               C02F0001-68 [N,A]; C02F0003-34 [I,C*]; C02F0003-34 [I,A];
               C12N0001-20 [I,C*]; C12N0001-20 [I,A]; C12N0011-00 [I,C*];
               C12N0011-12 [I,A]; C12P0001-04 [I,C*]; C12P0001-04 [I,A]
EXF     435/262.5; 435/822; 435/243; 435/264; 424/93.1; 424/94.1
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L3   ANSWER 3 OF 9  IFIPAT  COPYRIGHT 2008 IFI on STN  DUPLICATE 2
AN     04027638  IFIPAT;IFIUDB;IFICDB
TI     MICROBIAL ENZYME-ENHANCED ORGANIC-INORGANIC SOLID-CHEMICAL COMPOSITION
```

```
      AND METHODS FOR ANAEROBIC BIOREMEDIATION; PROVIDES RAPID AND
      COST-EFFECTIVE ANAEROBIC BIOREMEDIATION OF HALOGENATED SOLVENTS
IN    Hince Eric Christian
PA    Geovation Technologies Inc (61973)
PI    US 6699707      B1  20040302  (CITED IN 001 LATER PATENTS)
AI    US 2000-690395      20001017
RLI   US 1999-441484      19990916 CONTINUATION-IN-PART   6423531
FI    US 6699707          20040302
      US 6423531
DT    Utility; Granted Patent - Utility, no Pre-Grant Publication
FS    CHEMICAL
      GRANTED
OS    CA 140:176343
ED    Entered STN: 11 Mar 2004
      Last Updated on STN: 4 Oct 2004
CLMN  27
GI     3 Drawing Sheet(s),  3 Figure(s).
     FIG. 1 illustrates the effectiveness of several different embodiments of
      the disclosed chemical composition of the present invention with respect
      to control of redox conditions (Eh).
     FIG. 2 shows the effect of several different embodiments of the disclosed
      chemical composition of the present invention on DDT biodegradation
      rates.
     FIG. 3 shows the effect of several different embodiments of the disclosed
      chemical composition on toxaphene biodegradation rates.

L3   ANSWER 4 OF 9  USPATFULL on STN
AN     2003:240326  USPATFULL
TI     Solid-chemical composition for biodegradation comprising plant
       fiber-containing material and enzymes
IN     Hince, Eric Christian, Campbell Hall, NY, United States
PA     Geovation Technologies, Inc., Florida, NY, United States (U.S.
       corporation)
PI     US 6617150          B1  20030909
AI     US 2000-690419          20001017 (9)
RLI    Continuation-in-part of Ser. No. US 1999-440340, filed on 15 Nov 1999
DT     Utility
FS     GRANTED
LN.CNT 1173
INCL   INCLM: 435/262.500
       INCLS: 435/183.000; 435/252.100; 435/822.000
NCL    NCLM:  435/262.500
       NCLS:  435/183.000; 435/252.100; 435/822.000
IC     [7]
       ICM    C12N001-09
       ICS    C12N001-20; B09B003-00
       IPCI   C12N0001-09 [ICM,7]; C12N0001-20 [ICS,7]; B09B0003-00 [ICS,7]
       IPCR   B09C0001-10 [I,C*]; B09C0001-10 [I,A]; C02F0001-68 [N,C*];
              C02F0001-68 [N,A]; C02F0003-34 [I,C*]; C02F0003-34 [I,A];
              C12N0001-20 [I,C*]; C12N0001-20 [I,A]; C12N0011-00 [I,C*];
              C12N0011-12 [I,A]; C12P0001-04 [I,C*]; C12P0001-04 [I,A]
EXF    435/262.5; 435/183; 435/252.1; 435/822; 424/93.1
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L3   ANSWER 5 OF 9  CAPLUS  COPYRIGHT 2008 ACS on STN  DUPLICATE 3
AN   2002:609922  CAPLUS
DN   137:158474
TI   Advanced inorganic solid-chemical composition and methods for anaerobic
     bioremediation
IN   Hince, Eric Christian
PA   Geovation Technologies, Inc., USA
SO   U.S., 13 pp.
```

```
     CODEN: USXXAM
DT   Patent
LA   English
FAN.CNT 1
     PATENT NO.          KIND   DATE        APPLICATION NO.       DATE
     ---------------     ----   --------    --------------------   --------
PI   US 6432693           B1    20020813    US 1999-439698         19991115
PRAI US 1999-439698             19991115
RE.CNT  22     THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD
               ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3   ANSWER 6 OF 9  USPATFULL on STN                    DUPLICATE 4
AN      2002:171948  USPATFULL
TI      SLOW-RELEASE SOLID-CHEMICAL COMPOSITION AND METHOD FOR ANAEROBIC
        BIOREMEDIATION
IN      Hince, Eric Christian, Campbell Hall, NY, UNITED STATES
PI      US 2002090697        A1  20020711
        US 6620611           B2  20030916
AI      US 2001-755473       A1  20010106 (9)
DT      Utility
FS      APPLICATION
LN.CNT 1457
INCL    INCLM: 435/187.000
        INCLS: 435/183.000
NCL     NCLM:  435/262.500; 435/187.000
        NCLS:  210/600.000; 210/610.000; 435/176.000; 435/178.000; 435/179.000;
               435/187.000; 435/243.000; 435/252.500; 435/252.700; 435/253.300;
               435/254.220; 435/254.300; 435/183.000
IC      [7]
        ICM    C12N009-00
        ICS    C12N009-98
        IPCI   C12N0009-00 [ICM,7]; C12N0009-98 [ICS,7]
        IPCI-2 B09B0003-00 [ICM,7]; C02F0003-00 [ICS,7]; C12N0009-98 [ICS,7];
               C12N0011-10 [ICS,7]; C12N0011-12 [ICS,7]; C12N0011-00 [ICS,7,C*]
        IPCR   B09C0001-00 [I,C*]; B09C0001-00 [I,A]; B09C0001-10 [I,C*];
               B09C0001-10 [I,A]; C02F0003-34 [I,C*]; C02F0003-34 [I,A];
               C12N0009-98 [I,C*]; C12N0009-98 [I,A]
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L3   ANSWER 7 OF 9  USPATFULL on STN
AN      2002:181553  USPATFULL
TI      Advanced organic-inorganic solid-chemical composition and methods for
        anaerobic bioremediation
IN      Hince, Eric Christian, Campbell Hall, NY, United States
        Singer, Jennifer Ann, Goshen, NY, United States
PA      Geovation Technologies, Inc., Florida, NY, United States (U.S.
        corporation)
PI      US 6423531           B1  20020723
AI      US 1999-441484           19991117 (9)
DT      Utility
FS      GRANTED
LN.CNT 1510
INCL    INCLM: 435/262.000
        INCLS: 435/262.500; 423/DIG.017; 588/249.000; 588/901.000; 210/610.000;
               210/611.000
NCL     NCLM:  435/262.000
        NCLS:  210/610.000; 210/611.000; 423/DIG.017; 435/262.500; 588/249.000;
               588/901.000
IC      [7]
        ICM    B09B003-00
        IPCI   B09B0003-00 [ICM,7]
        IPCR   B09C0001-00 [I,C*]; B09C0001-08 [I,A]; B09C0001-10 [I,C*];
```

```
              B09C0001-10 [I,A]
EXF    435/262; 435/262.5; 423/DIG.17; 588/249; 588/901; 071/6; 210/610;
       210/611
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L3   ANSWER 8 OF 9  USPATFULL on STN
AN     2002:136808  USPATFULL
TI     Method for the enhanced anaerobic bioremediation of contaminants in
       aqueous sediments and other difficult environments
IN     Hince, Eric Christian, Campbell Hall, NY, United States
PA     Geovation Consultants Inc., Florida, NY, United States (U.S.
       corporation)
PI     US 6403364          B1  20020611
AI     US 2000-493827          20000128 (9)
DT     Utility
FS     GRANTED
LN.CNT 1160
INCL   INCLM: 435/262.500
       INCLS: 435/262.000; 210/610.000; 210/747.000
NCL    NCLM:  435/262.500
       NCLS:  210/610.000; 210/747.000; 435/262.000
IC     [7]
       ICM    C12S013-00
       IPCI   C12S0013-00 [ICM,7]
       IPCR   B09C0001-10 [I,C*]; B09C0001-10 [I,A]; C12S0009-00 [I,C*];
              C12S0009-00 [I,A]
EXF    435/262; 435/262.5; 435/179; 435/264; 071/8-11; 071/64.11; 210/610;
       210/611; 210/747; 252/184; 424/468-470; 502/404; 502/518; 504/117
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L3   ANSWER 9 OF 9  DISSABS COPYRIGHT (C) 2008 ProQuest Information and
     Learning Company; All Rights Reserved on STN
AN   92:28906  DISSABS   Order Number: AAR9233920
TI   REDUCTIVE DEHALOGENATION OF POLYBROMINATED AND POLYCHLORINATED BIPHENYLS
     BY ANAEROBIC MICROORGANISMS FROM SEDIMENT
AU   MORRIS, PAMELA JO [PH.D.]
CS   MICHIGAN STATE UNIVERSITY (0128)
SO   Dissertation Abstracts International, (1992) Vol. 53, No. 7B, p. 3296.
     Order No.: AAR9233920. 119 pages.
DT   Dissertation
FS   DAI
LA   English
ED   Entered STN: 19921230
     Last Updated on STN: 19921230


=> d l3 2 ab

L3   ANSWER 2 OF 9  USPATFULL on STN
AB     The present invention discloses the formulation and use of an advanced
       organic solid-media chemical composition designed and intended to
       enhance the removal of a broad range of contaminants in the environment
       by provided an improved means of promoting the anaerobic,
       biologically mediated degradation, transformation, and/or
       detoxification of the contaminants which may be present in solid and
       liquid wastes, soils, sediments, and water bodies. The invention
       provides for improved means of (i) promoting the solid-phase extraction
       and absorption of recalcitrant contaminants from contaminated media,
       (ii) creating, enhancing, and maintaining anaerobic conditions
       (i.e., negative Eh values), (iii) providing a source of carbonaceous
       co-substrates, anaerobic electron acceptors
       , and nutrient to promote the growth of contaminant-degrading
```

microorganisms, and (iv) providing sources of inoculum of naturally occurring microorganisms which act to promote the biodegradation of contaminants.

=> d l3 2 kwic

L3 ANSWER 2 OF 9 USPATFULL on STN

AB . . . enhance the removal of a broad range of contaminants in the environment by provided an improved means of promoting the anaerobic, biologically mediated degradation, transformation, and/or detoxification of the contaminants which may be present in solid and liquid wastes, soils, sediments, and water bodies.. . . means of (i) promoting the solid-phase extraction and absorption of recalcitrant contaminants from contaminated media, (ii) creating, enhancing, and maintaining anaerobic conditions (i.e., negative Eh values), (iii) providing a source of carbonaceous co-substrates, anaerobic electron acceptors , and nutrient to promote the growth of contaminant-degrading microorganisms, and (iv) providing sources of inoculum of naturally occurring microorganisms which act to promote the biodegradation of contaminants.

SUMM . . . the formulation and use of an advanced solid-media chemical composition designed and intended to enhance the removal of petroleum hydrocarbons, halogenated organic contaminants and the oxidized forms of inorganic contaminants from industrial wastes, soils, sediments, sludges, ground waters, surface waters, and the like. In particular, this invention provides an improved means of promoting the anaerobic, biologically mediated degradation, transformation, and/or detoxification of a broad range of organic contaminants in the environment, including, but not limited to, petroleum products. . . . polycyclic aromatic hydrocarbons (PAHs); organochlorine pesticides such as DDT and toxaphene; arsenic and/or arsenate-based pesticides; polychlorinated biphenyls (PCBs); dioxins; and halogenated organic solvents such as perchloroethylene, trichloroethylene, trichloroethane, and freon. Either alone or in combination with other liquid and solid-chemical compositions,. . . contaminants from contaminated media, which thereby enhances the bioavailability and biogeochemical reactivity of such contaminants, (ii) creating, enhancing and maintaining anaerobic conditions which promote biologically mediated denitrification, manganese-reduction and iron-reduction processes; (iii) promoting reducing conditions favorable to the biologically mediated dehalogenation, transformation and/or detoxification of halogenated contaminants by naturally occurring microorganisms; (iv) providing a source of complex carbonaceous co-substrates, anaerobic electron acceptors, and nutrients to promote the growth of these contaminant-degrading microorganisms, and (v) providing sources of inoculum of different types of naturally occurring microorganisms which act to directly undertake or. . .

SUMM . . . of industrial activities over the last two centuries. Common environmental contaminants include several different types and forms of petroleum hydrocarbons, halogenated organic compounds including solvents (e.g., tetra- and trichloroethene, methylene chloride), pesticides (e.g., DDT and toxaphene), polychlorinated biphenyls (i.e., PCBs), and. . . inorganic contaminants such as cyanides. The available toxicological data indicates that many of these contaminants, (in particular many of the halogenated organic compounds), are either carcinogenic or potentially carcinogenic to both man and animals. In addition, the available environmental and ecological. . .

SUMM . . . bioremediation technology indicate that the most technically

feasible and commercially successful bioremediation technologies are those which utilize indigenous or "native" contaminant-degrading bacteria (CDB), fungi and other microorganisms which are naturally present in the contaminated media. The presence of CDB in many. . . literature. There is an extensive body of prior art literature and patents concerning various means of using both aerobic and anaerobic CDB (as well as engineered or cultured bacteria) to biodegrade organic contaminants in water, soil and industrial wastes. For example, it has been reported that native Alcaligenes spp., Pseudomonas spp., and Enterobacter spp. can degrade a number of pesticides and polychlorinated biphenyls (Nadeau et al., 1994, Applied and Environmental Microbiology; Aislabie et al., 1997, New. . . the scientific and engineering communities. Recent trends in the art and literature acknowledge a growing understanding of the use of anaerobic biological processes in the treatment of many different types of contaminants that are otherwise recalcitrant under aerobic conditions. In particular, trends in the art reflect a growing understanding of the need and importance of achieving and maintaining anaerobic conditions and other factors which favor the biologically mediated reduction, biodegradation, transformation and/or detoxification of recalcitrant organic and inorganic contaminants. . .

SUMM The current understanding reflected by the art is that the recalcitrant nature of many halogenated organic contaminants, polynuclear aromatic hydrocarbons (PAHs), other heavy (i.e., high-molecular weight) hydrocarbons, and the like is related to the hydrophobic. . .

SUMM . . . chlorinated aromatic compounds. The method disclosed by Gray et al. also describes the use of cyclical and/or alternating aerobic and anaerobic treatment steps. Gray et al. does not discuss or disclose the art of using the plant material to increase the bioavailability or biogeochemical reactivity of the contaminants or the use of these plant materials to help create or control anaerobic conditions. Gray et al. disclose means by which moist air is moved through the compost and chemical reducing agents, such as sulphite and acetate, are added to maintain anaerobic conditions. Unlike the present invention, Gray et al. does not teach or disclose the importance of legume-related or plant-fiber degrading organisms to bioremediation processes which involve the addition of plant-material or means or methods of enhancing the growth and activity of such organisms to optimize the degradation of contaminants in association with plant material. Gray et al. (U.S. Pat. No. 5,902,744) does not disclose the compositions or. . .

SUMM . . . investigated the use of "ground alfalfa" or "alfalfa volatiles" obtained by the distillation of an alfalfa-water slurry to enhance the anaerobic degradation of DDT from soil. Parr and Smith (Soil Science, 1976) teach a similar method for the degradation of toxaphene. The results of each of these prior studies indicated that the processes of pesticide dechlorination were both biological and anaerobic in nature. These investigators hypothesized that the addition of the plant material provided energy which in turn increased the rates. . .

SUMM . . . Nos. 5,411,664 and 5,618,427 to Seech et al. (W. R. Grace) disclose practically identical methods for the respective biodegradation of halogenated aromatic compounds (U.S. Pat. No. 5,411,664) and nitroaromatic compounds (U.S. Pat. No. 5,618,427). Both patents disclose the use of both. . . the contaminated media. These patents discuss adding these amendments to soil, water or sediments and subsequently incubating these media under anaerobic conditions conducive to the growth of the indigenous contaminant-degrading microorganisms. Like Dickerson (U.S. Pat. No. 5,609,667), the patents to Seech et al. disclose that the fibrous nature of the. . . the extent of contaminant removal from the environmental media. Seech et al. do not disclose the importance of legume-related or fiber-degrading

microorganisms to bioremediation processes which involve the addition of fibrous plant materials or means or methods of enhancing the growth and activity of such organisms to optimize the degradation of contaminants which become incorporated into the plant materials. Unlike the present invention, Seech et al. also disclose the use. . .

SUMM . . . provided novel and improved solid-chemical compositions and associated methods and means for the use of these compositions to promote the anaerobic, biologically mediated, degradation, transformation, and/or detoxification of organic contaminants, and potentially certain inorganic contaminants as well, which may be present in solid and liquid wastes, soils, sediments, and water bodies. The principles of this invention provide for the relatively rapid and cost-effective anaerobic, biologically mediated decontamination of such contaminants which are converted into non-hazardous mineral forms and/or less hazardous by-products.

SUMM . . . biogeochemical reactivity of the contaminants via the absorption and/or solid-phase extraction of contaminants from environmental media; (2) create and maintain anaerobic if not anoxic conditions by facilitating the biologically mediated removal of the available oxygen from the media; (3) create and. . . maintain reducing conditions (i.e., negative Eh values) and near neutral to slightly acidic pH conditions ($6\leq$ pH ≤ 8) which favor anaerobic, biologically mediated chemical-reduction reactions, e.g., the reductive dehalogenation of halogenated organic contaminants; and (4) provide means for maintaining conditions (1)-(3) for sufficiently long periods of time to enable the biologically mediated degradation, transformation, and/or detoxification reactions to proceed to the extent that the concentrations and/or toxicity of the contaminants are reduced to. . .

SUMM The discoveries disclosed herein indicate and/or strongly suggest that such contaminants can be effectively degraded, transformed, and/or detoxified by indigenous, contaminant-degrading bacteria when the solid-chemical compositions disclosed herein are applied to the contaminated media and the media are subsequently maintained under conditions favorable to the anaerobic microorganisms and the biogeochemical reactions mediated by these organisms, i.e., the media are kept moist or nearly saturated with water.. . . of indigenous bacterial populations which include both legume-related microorganisms such as Rhizobium spp. and Bradyrhizobium spp. and the like and fiber-degrading (i.e., lignin- and cellulose-degrading) bacteria such as Fibrobacter spp. and the like. For purposes of explanation and not limitation, it is believed that the aforementioned legume-related and fiber-degrading microorganisms greatly enhance the anaerobic biodegradation, transformation, and/or detoxification of recalcitrant contaminants either directly and/or by breaking down the cellulose-containing materials which the contaminants have. . .

DETD . . . the bioremediation of wastes and environmental media contaminated with organic contaminants such as petroleum hydrocarbons (e.g., gasoline, oils, and PAHs); halogenated solvents such as tetrachloroethene, trichloroethene, 1,1,1-trichloroethane, freon, and the like; and other recalcitrant halogenated organic compounds such as DDT, toxaphene, PCBs, dioxins, and the like. In addition, the compositions disclosed herein are believed to. . .

DETD . . . of the disclosed solid-chemical compositions and methods provide for a combination of means, mechanisms, processes, and factors which enhance the anaerobic biodegradation, transformation, and/or detoxification of recalcitrant environmental contaminants including:

(1) the plant-derived components in the disclosed solid-chemical compositions promote anaerobic and reducing conditions and the physical and

biogeochemical extraction of the hydrophobic substances from the contaminated media and into the. . . of the plant fibers, thereby greatly increasing the bioavailability and biogeochemical reactivity of the contaminants to a broad spectrum of contaminant-degrading microorganisms;

(2) The solid-chemical compositions disclosed herein provide a combined source of organic inoculum and substrates for soil, legume-related and fiber-degrading microorganisms such as Pseudomonas spp., Rhizobium spp., Bradyrhizobium spp., Fibrobacter spp., Clostridium spp. and the like. For purposes of explanation and not limitation, it is believed that the legume-related and fiber-degrading microorganisms greatly enhance the anaerobic biodegradation, transformation, and/or detoxification of recalcitrant contaminants either directly and/or by breaking down the plant-fiber materials which in turn make the contaminants which have become adhered to and/or impregnated therein available to a broad spectrum of anaerobic microorganisms. This latter advantage of the present invention represents a major and extremely important advancement in the art. Hence, the solid-chemical compositions disclosed herein provide unique advantages which greatly enhance the speed and effectiveness of the anaerobic, biologically mediated biodegradation, transformation and/or detoxification of recalcitrant contaminants.

(3) The organic materials derived from nitrogen-fixing plants included in the solid-chemical compositions disclosed herein provide a combination of carbonaceous co-substrates, nitrogen-based electron acceptors such as nitrates and nitrites, complex nutrient forms of nitrogen such as amines, proteins and enzymes, and complex nutrient forms of phosphorus such as phospholipids and fatty acids for anaerobic soil, legume-related and fiber-degrading microorganisms as well as for other anaerobic microorganisms capable of denitrification processes. Hence, the use of these nitrogen-fixing and/or leguminous plant materials as disclosed in the present invention provides for ideal growth conditions of said microorganisms. In addition, the nitrogenous electron acceptors and nutrients provided by these materials provide a means by which to promote the anaerobic biodegradation of the other organic components of the disclosed chemical compositions, as well as the contaminants incorporated therein, by organisms capable of denitrification, metal-reduction and other anaerobic respiration processes.

(4) In addition to the foregoing, and for purposes of explanation and not limitation, the biogeochemically produced (i.e., `biogenic`). . .

DETD Based on the foregoing and in accordance with the present invention, there are provided means for the enhanced anaerobic microbial degradation, transformation and/or detoxification of recalcitrant organic and inorganic chemical contaminants in wastes, soils, and sediments, and comprising the formulation, processing. . .

DETD . . . group comprised of sodium nitrate, sodium-potassium nitrate, potassium nitrate and ferric nitrate. Inorganic component (c) provides both a source of electron acceptors for denitrifying bacteria and other anaerobic microorganisms capable of denitrification and an ammonium-free source of nitrates as the sole inorganic. . .

DETD . . . to 5% of the total composition by weight and is selected from one or more of the group comprising citric acid, humic acid, fulvic acid, sodium citrate and EDTA. Component (e) of the disclosed composition provides a source of both chelating agents and acidifying agents which help promote anaerobic, biologically mediated metal-reduction processes and other biogeochemical processes which are catalyzed by metals. In the preferred embodiment of the present invention, oitric acid is used as some or all of component (e) given that it is not only an effective chelator and pH-reducing (i.e., acidifying) agent, but it is a weak organic

acid which can help promote microbial processes. The use of humic and/or fulvic acid in component (e) provides similar and complimentary benefits to the use of citric acid.

DETD . . . one or more of the group comprising soil microorganisms (e.g., Pseudomonas spp.), legume-related microorganisms (e.g., Rhizobium spp., Bradyrhizobium spp.), plant-fiber degrading (i.e., lignin- and cellulose-degrading) microorganisms (e.g., Fibrobacter spp., Clostridium spp., and various species of fungi) and metal-reducing microorganisms (e.g., Geobacter spp.). In the preferred embodiment of the present invention, particular emphasis is placed on the use of inoculum for plant-fiber degrading microorganisms such as the anaerobic bacteria Fibrobacter spp., Clostridium spp., and the like and/or plant-fiber degrading species of fungi. A further distinction of the preferred embodiment of the present invention would include the use of "biogenic". . . the novel research associated with the present invention suggests that in addition to providing a source of electrons and ferric-iron electron acceptors for metal-reducing bacteria, such biogeochemically produced ferric oxyhydroxides also serve as inoculum for metal-reducing and oxidizing bacteria such as Geobacter. . .

DETD . . . absorb and adsorb hydrophobic organic contaminants from contaminated media. In addition, the chemical composition provides sources of carbonaceous co-substrates, organic electron donors, organic and inorganic electron acceptors, organic and inorganic forms of nutrient nitrogen and phosphorus, and chelating and/or acidifying agents. In addition, the plant materials included. . . as both a substrate and inoculum for legume-related bacteria such as Rhizobium spp., Bradyrhizobium spp., and the like, and plant-fiber degrading microorganisms such as Fibrobacter spp., Clostridium spp., plant-degrading fungi, and the like. Hence, after the contaminants are absorbed within the plant material, they subsequently become "bioavailable" to a broad spectrum of anaerobic microorganisms via the activity of such microorganisms. It is further believed the complex enzymatic capabilities of the aforementioned fiber-degrading microorganisms may enable these microorganisms to either degrade the contaminants directly, e.g., through the use of cellulosomes or similar means, or as a co-metabolic function of the degradation of the plant-derived materials included in the chemical composition.

DETD . . . composition, such as the aforementioned leguminous materials, includes the ability of such materials to promote the growth and activity of anaerobic microorganisms which are specifically capable of denitrification-processes which utilize the nitrogenous electron acceptors and nutrients present in these materials. In addition, by providing such nitrogen-fixing plant materials in the amounts of at least 20% of the total composition by weight, these materials provide "excess" amounts of electron acceptors, nutrient forms of nitrogen and phosphorus, proteins, enzymes, and inoculum for plant-fiber degrading microorganisms which promote the biodegradation of the other plant-derived components of the composition as well as the contaminants incorporated therein.. . .

DETD . . . the contaminants. The overwintering process also promotes the anaerobic bioremediation of contaminants by increasing the bioavailability of the legume-related co-substrates, electron donors and acceptors, nutrients and the like to many different types of microorganisms within the soil matrix.

DETD . . . selected from the group comprising nitrates, nitrites, phosphates, surfactants, alcohols, vegetable oils, mineral oils, corn syrup, barley malt extract, molasses, humic acids, fulvic acids and chelating agents. Subsequent additions of water and/or liquid chemical compositions can be applied as needed, and

may be desirable,. . .

DETD A second pilot-scale test of four different approaches to the anaerobic bioremediation of the pesticides DDT and toxaphene was conducted from December 1998 through June 1999 in order to investigate the. . . to conduct additional experiments to investigate the effects of various organic and inorganic chemical compositions and combinations thereof on pesticide degradation.

DETD . . . literature and related research conducted from December 1998 to date has indicated that Fibrobacter spp. are known to be plant-fiber degrading (e.g., lignin- and cellulose-degrading) bacteria for which the "conventional wisdom" and prior art have held are most commonly associated with the breakdown of plant fiber in the rumen of cattle and similar environments. Furthermore, the available literature indicate that Fibrobacter spp. are anaerobic bacteria which degrade cellulose and lignin using a fermentative-type metabolism. In addition, the subsequent research has indicated that the Rhizobium spp. and Bradyrhizobium spp. are legume-related bacteria associated with the roots of legumes which are responsible for the anaerobic fixation of elemental nitrogen. Moreover, Bradyrhizobium spp. were found to be the specific bacterial symbionts found in association with the roots of Lespedeza spp. Hence, these results led to the novel hypothesis disclosed herein that such fiber-degrading bacteria, (and possibly the legume-related bacteria as well), were either directly responsible for the biodegradation of the pesticides and/or carried out processes which greatly increased the bioavailability of the pesticides to other anaerobic, contaminant-degrading microorganisms.

CLM What is claimed is:

. . . to 5%, by weight percent, of said composition wherein said chelating agents are selected from the group consisting of citric acid, humic acid, fulvic acid, sodium citrate, nitrilotriacetic acid (NTA), and ethylenediaminetetraacetic acid (EDTA).

. . . from the group consisting of nitrates, nitrites, phosphates, surfactants, alcohols, vegetable oils, mineral oils, corn syrup, barley malt extract, molasses, humic acids, fulvic acids and chelating agents.

=> d l3 3 ab

L3 ANSWER 3 OF 9 IFIPAT DUPLICATE 2

AB The present invention discloses the formulation and use of an advanced solid-media chemical composition which includes both plant-derived and inorganic components which is designed and intended to enhance the removal of a broad range of recalcitrant organic and inorganic contaminants in the environment by providing an improved means of promoting the anaerobic, biologically mediated degradation, transformation, and/or detoxification of the contaminants which may be present in solid and liquid wastes, soils, sediments, and water bodies. The invention provides for improved means of (i) promoting the solid-phase extraction, absorption, and adsorbtion of recalcitrant contaminants from contaminated media, (ii) creating, enhancing, and maintaining anaerobic and highly reducing conditions (i.e., negative Eh values); (iii) providing sources of carbonaceous co-substrates, inorganic, and organic anaerobic electron acceptors, and organic and inorganic nutrients to promote the growth of contaminant-degrading microorganisms, and (iv) providing sources of inoculum of naturally occurring microorganisms which act to promote the biodegradation of contaminants.

Additional forms, means, and methods for the production and use of the disclosed solidchemical composition are also provided to provide additional advantages and to enhance other advantages provided by the composition and/or the components thereof.

=> d l3 4 ab

L3 ANSWER 4 OF 9 USPATFULL on STN

AB A solid-chemical composition which provides for extraction and absorption of hydrophobic chemical contaminants and further promotes biodegradation of contaminants is provided. The composition comprises one or more plant fiber-containing materials selected from Leguminosae and Phaeophyta in an amount of 20% to 97% by weight percent of the composition, one or more plant fiber-containing materials selected from Gossypium and Cannabacea in an amount of 3% to 80% by weight percent of the composition, and one or more enzymes in an amount of 0.0001% to 3% by weight of the composition. Further, additionally a source of microorganisms capable of producing the enzymes may be contained in the composition. Also disclosed is a method for the bioremediation of the contaminants in environmental media wherein the solid-chemical composition is applied to the environmental media in an amount of about 0.1 gram to 1000 grams of the composition per kilogram of the environmental media.

=> d l3 5 ab

L3 ANSWER 5 OF 9 CAPLUS COPYRIGHT 2008 ACS on STN DUPLICATE 3

AB The present invention discloses the formulation and use of an advanced inorg. solid-media chemical composition designed and intended to enhance the removal of a broad range of contaminants in the environment by provided an improved means of promoting the anaerobic, biol. mediated degradation, transformation, and/or detoxification of the contaminants which may be present in industrial and/or hazardous liquid and solid wastes, and contaminated environmental media such as soils, sediments, groundwaters and surface water bodies. The disclosed inorg. chemical composition of the present invention provides improved means of: (1) promoting and enhancing the biogeochem. reactivity of recalcitrant contaminants in contaminated media; (2) creating, enhancing, and maintaining anaerobic and strongly reducing conditions (i.e., highly neg. Eh values); (3) providing a source of inorg. electron acceptors, nutrients, surfactants, and chelating and/or acidifying agents to promote the growth of anaerobic contaminant-degrading microorganisms; and (4) providing sources of inoculum of naturally occurring microorganisms which act to promote the biodegrdn. of contaminants. The solid-chemical composition of the present invention provides multiple inorg. sources of electrons, electron acceptors, substrates, nutrients, and inoculum for anaerobic, metal-reducing bacteria such as Geobacter spp., Geovibrio spp., Pelobacter spp., Shewanella spp., Pseudomonas spp., Achromobacter spp., Aeromonas spp., Bacillus spp., Enterobacter spp., Desulfuromonas spp., Desulfovibrio spp., Micrococcus spp., and other microorganisms capable of iron reduction, manganese reduction, and the reduction of other metals. The principles of this invention provide for the relatively rapid and cost-effective anaerobic, biol. mediated decontamination of halogenated solvents; other recalcitrant halogenated organic compds. such as DDT, toxaphene, PCBs, dioxins, and the like; arsenic-based pesticides; and recalcitrant inorg. contaminants such as cyanides, hexavalent chromium, the oxidized forms of other toxic transition metals, and the like.

=> d l3 6 ab

L3 ANSWER 6 OF 9 USPATFULL on STN DUPLICATE 4

AB The present invention discloses the formulations, forms and functions of advanced solid-chemical compositions which provide balanced, sustained-release sources of soluble and insoluble organic substrates and complex inorganic phosphates, as well as other beneficial agents, which when used as intended, provides for relatively simple and inexpensive means of enhancing the anaerobic bioremediation and dehalogenation of halogenated organic contaminants, such as trichloroethene (TCE), as well as the biologically mediated chemical reduction of oxidized forms of certain inorganic contaminants, such as chromium (VI), uranium (VI), and arsenate-based pesticides. Preferred embodiments of the disclosed solid-chemical compositions include the incorporation of a broad and balanced suite of soluble organic substrates including soluble sugars, molasses and milk; soluble organic salts; and soluble organic polymers. The solid-chemical compositions and the preferred forms thereof provide a simple and cost-effective means for supplying other beneficial amendments and agents to enhance the breakdown of environmental contaminants including organic and inorganic sources of nitrogen; simple inorganic phosphates; chelating agents; disintegrants; fillers, binders and pH buffers; lubricants and glidants; plant-material and organic-polymer degrading enzymes; and inoculum for different types of microorganisms, including microorganisms which produce the aforementioned plant-material and organic-polymer degrading enzymes. The disclosed solid-chemical compositions provide improved means of creating and maintaining anaerobic and reducing conditions which favor the biologically mediated chemical reduction and anaerobic biodegradation, transformation, and/or detoxification of recalcitrant contaminants present in solid and liquid wastes, waste waters, soils, sediments, ground-waters, surface-water bodies and other environmental media. The solid-chemical compositions are preferably produced and applied in the forms of granules, briquettes, pellets, tablets, and capsules, and the like.

=> d l3 7 ab

L3 ANSWER 7 OF 9 USPATFULL on STN

AB The present invention discloses the formulation and use of an advanced solid-media chemical composition which includes both plant-derived and inorganic components which is designed and intended to enhance the removal of a broad range of recalcitrant organic and inorganic contaminants in the environment by provided an improved means of promoting the anaerobic, biologically mediated degradation, transformation, and/or detoxification of the contaminants which may be present in solid and liquid wastes, soils, sediments, and water bodies. The invention provides for improved means of (i) promoting the solid-phase extraction, absorption and adsorbtion of recalcitrant contaminants from contaminated media, (ii) creating, enhancing, and maintaining anaerobic and highly reducing conditions (i.e., negative Eh values), (iii) providing a sources of carbonaceous co-substrates, inorganic and organic anaerobic electron acceptors, and organic and inorganic nutrients to promote the growth of contaminant-degrading microorganisms, and (iv) providing sources of inoculum of naturally occurring microorganisms which act to promote the biodegradation of contaminants. Additional forms, means and methods for the production and use of the disclosed solid-chemical composition are also provided to provide additional advantages and to enhance other advantages provided by the composition and/or the components thereof.

=> d l3 8 ab

L3 ANSWER 8 OF 9 USPATFULL on STN

AB The present invention discloses the formulation and use of advanced solid-media chemical compositions in the preferred forms of pellets, tablets, capsules, or other similar forms which are designed and intended to enhance the removal of a broad range of recalcitrant organic and inorganic contaminants from a variety of difficult-to-treat environments, in particular, sediments beneath water bodies, by providing an improved means of promoting the anaerobic, biologically mediated degradation, transformation, and/or detoxification of the contaminants. Specific properties of the pellet, tablets, capsules, or other similar forms of the compositions are disclosed which enable the variation in the settling velocity of the compositions and hence the depth to which the compositions will penetrate the underlying contaminated sediments. The compositions comprise carbonaceous co-substrates, inorganic and organic anaerobic electron acceptors, organic and inorganic nutrients to promote the growth of contaminant-degrading microorganisms, and inoculum of naturally occurring microorganisms which act to promote the biodegradation of contaminants.

=> d l3 9 ab

L3 ANSWER 9 OF 9 DISSABS on STN

AB Polychlorinated biphenyls (PCBs) and polybrominated biphenyls (PBBs) are stable industrial chemicals that consist of complex mixtures considered to be highly recalcitrant to biological degradation in the environment. Reductive dehalogenation (when a halogen on the biphenyl molecule is replaced by a hydrogen) is the only known biodegradation process for the more highly halogenated PCB and PBB mixtures. Studies were undertaken to: (1) examine in situ reductive debromination in sediments of the Pine River Reservoir, (2) compare the ability of microorganisms from PCB-contaminated and PBB-contaminated sediments to debrominate the commercial PBB mixture, Firemaster, (3) examine factors which might enhance reductive dehalogenation in sediments, (4) evaluate the role of sediment for dechlorinating microorganisms. Sediments in the heavily contaminated region of the Pine River have undergone little or no debromination. Anaerobic microorganisms previously shown to dechlorinate PCB mixtures were unable to dechlorinate Aroclor 1242 in the presence of Pine River sediments located close to the PBB manufacturing site. Microorganisms downstream of the heaviest contamination were able to debrominate Firemaster. Microorganisms from the Pine River (contaminated with Firemaster), Hudson River (contaminated with Aroclor 1242) and Silver Lake (contaminated with Aroclor 1260), removed 32%, 12%, and 3% of the meta plus para bromines, respectively, after 32 weeks. The Pine River inoculum removed an average of 1.25 bromines from the biphenyl molecule. When Firemaster was incubated with Hudson River microorganisms (repeatedly transferred with pyruvate and Aloclor 1242), 17% of the meta and para bromines were removed after 16 weeks, and additional debromination products, 2-bromobiphenyl and biphenyl, were detected. This suggests ortho debromination, since all components of Firemaster have at least one ortho-substituted bromine. A PCB enrichment culture (with activity over nine transfers) was established using pyruvate as an electron donor and Aroclor 1242 as the electron acceptor. Three Michigan surface soils, Pine River sediments (downstream of the heavily contaminated region), and ashed sediment (with 20% ruminal fluid medium or humic acid) supported

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     reductive dechlorination of Aroclor 1242 by Hudson River microorganisms.


=> s l3 and nitr?
L4           8 L3 AND NITR?

=> d l4 1-8

L4   ANSWER 1 OF 8  CAPLUS  COPYRIGHT 2008 ACS on STN
AN   2002:609922  CAPLUS
DN   137:158474
TI   Advanced inorganic solid-chemical composition and methods for anaerobic
     bioremediation
IN   Hince, Eric Christian
PA   Geovation Technologies, Inc., USA
SO   U.S., 13 pp.
     CODEN: USXXAM
DT   Patent
LA   English
FAN.CNT 1
     PATENT NO.          KIND   DATE        APPLICATION NO.        DATE
     ---------------     ----   --------    --------------------   --------
PI   US 6432693           B1    20020813    US 1999-439698         19991115
PRAI US 1999-439698             19991115
RE.CNT  22    THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD
              ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4   ANSWER 2 OF 8  IFIPAT  COPYRIGHT 2008 IFI on STN
AN    11217300  IFIPAT;IFIUDB;IFICDB
TI    ANAEROBIC BIOLOGICAL DEGRADATION OF HYDROCARBONS
IN    Ballerstedt Hendrik (NL); Gerritse Jan (NL); Langenhoff Alette Anna Maria
      (NL); Rijnaarts Hubertus Henricus Martinus (NL)
PA    Unassigned Or Assigned To Individual (68000)
PPA   Nederlandse Organisatie Voor Toegepast Natuurwetenschappelijk Onderzock
Tno NL (Probable)
PI    US 2006166348   A1  20060727
AI    US 2003-527409      20030912
      WO 2003-NL632       20030912
                          20051227  PCT 371 date
                          20051227  PCT 102(e) date
PRAI  NL 2002-1021458     20020913
FI    US 2006166348       20060727
DT    Utility; Patent Application - First Publication
FS    CHEMICAL
      APPLICATION
ED    Entered STN: 27 Jul 2006
      Last Updated on STN: 27 Jul 2006
CLMN  10

L4   ANSWER 3 OF 8  IFIPAT  COPYRIGHT 2008 IFI on STN
AN    04027638  IFIPAT;IFIUDB;IFICDB
TI    MICROBIAL ENZYME-ENHANCED ORGANIC-INORGANIC SOLID-CHEMICAL COMPOSITION
      AND METHODS FOR ANAEROBIC BIOREMEDIATION; PROVIDES RAPID AND
      COST-EFFECTIVE ANAEROBIC BIOREMEDIATION OF HALOGENATED SOLVENTS
IN    Hince Eric Christian
PA    Geovation Technologies Inc (61973)
PI    US 6699707      B1  20040302  (CITED IN 001 LATER PATENTS)
AI    US 2000-690395      20001017
RLI   US 1999-441484      19990916 CONTINUATION-IN-PART   6423531
FI    US 6699707          20040302
      US 6423531
DT    Utility; Granted Patent - Utility, no Pre-Grant Publication
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FS     CHEMICAL
       GRANTED
OS     CA 140:176343
ED     Entered STN: 11 Mar 2004
       Last Updated on STN: 4 Oct 2004
CLMN   27
GI      3 Drawing Sheet(s),  3 Figure(s).
      FIG. 1 illustrates the effectiveness of several different embodiments of
       the disclosed chemical composition of the present invention with respect
       to control of redox conditions (Eh).
      FIG. 2 shows the effect of several different embodiments of the disclosed
       chemical composition of the present invention on DDT biodegradation
       rates.
      FIG. 3 shows the effect of several different embodiments of the disclosed
       chemical composition on toxaphene biodegradation rates.

L4    ANSWER 4 OF 8  USPATFULL on STN
AN      2005:295238  USPATFULL
TI      Plant-fiber containing composition for anaerobic bioremediation
IN      Hince, Eric Christian, Campbell Hall, NY, UNITED STATES
        Singer, Jennifer Ann, Goshen, NY, UNITED STATES
PA      Geovation Technologies, Inc., Florida, NY, UNITED STATES (U.S.
        corporation)
PI      US 6967099          B1  20051122
AI      US 1999-440340          19991115 (9)
DT      Utility
FS      GRANTED
LN.CNT 1222
INCL    INCLM: 435/262.500
        INCLS: 435/243.000; 435/264.000
NCL     NCLM:  435/262.500
        NCLS:  435/243.000; 435/264.000
IC      [7]
        ICM    B09B003-00
        ICS    C12N001-00; D06M016-00
        IPCI   B09B0003-00 [ICM,7]; C12N0001-00 [ICS,7]; D06M0016-00 [ICS,7]
        IPCR   B09C0001-10 [I,C*]; B09C0001-10 [I,A]; C02F0001-68 [N,C*];
               C02F0001-68 [N,A]; C02F0003-34 [I,C*]; C02F0003-34 [I,A];
               C12N0001-20 [I,C*]; C12N0001-20 [I,A]; C12N0011-00 [I,C*];
               C12N0011-12 [I,A]; C12P0001-04 [I,C*]; C12P0001-04 [I,A]
EXF     435/262.5; 435/822; 435/243; 435/264; 424/93.1; 424/94.1
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4    ANSWER 5 OF 8  USPATFULL on STN
AN      2003:240326  USPATFULL
TI      Solid-chemical composition for biodegradation comprising plant
        fiber-containing material and enzymes
IN      Hince, Eric Christian, Campbell Hall, NY, United States
PA      Geovation Technologies, Inc., Florida, NY, United States (U.S.
        corporation)
PI      US 6617150          B1  20030909
AI      US 2000-690419          20001017 (9)
RLI     Continuation-in-part of Ser. No. US 1999-440340, filed on 15 Nov 1999
DT      Utility
FS      GRANTED
LN.CNT 1173
INCL    INCLM: 435/262.500
        INCLS: 435/183.000; 435/252.100; 435/822.000
NCL     NCLM:  435/262.500
        NCLS:  435/183.000; 435/252.100; 435/822.000
IC      [7]
        ICM    C12N001-09
```

```
       ICS     C12N001-20; B09B003-00
       IPCI    C12N0001-09 [ICM,7]; C12N0001-20 [ICS,7]; B09B0003-00 [ICS,7]
       IPCR    B09C0001-10 [I,C*]; B09C0001-10 [I,A]; C02F0001-68 [N,C*];
               C02F0001-68 [N,A]; C02F0003-34 [I,C*]; C02F0003-34 [I,A];
               C12N0001-20 [I,C*]; C12N0001-20 [I,A]; C12N0011-00 [I,C*];
               C12N0011-12 [I,A]; C12P0001-04 [I,C*]; C12P0001-04 [I,A]
EXF    435/262.5; 435/183; 435/252.1; 435/822; 424/93.1
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4   ANSWER 6 OF 8  USPATFULL on STN
AN     2002:181553  USPATFULL
TI     Advanced organic-inorganic solid-chemical composition and methods for
       anaerobic bioremediation
IN     Hince, Eric Christian, Campbell Hall, NY, United States
       Singer, Jennifer Ann, Goshen, NY, United States
PA     Geovation Technologies, Inc., Florida, NY, United States (U.S.
       corporation)
PI     US 6423531          B1  20020723
AI     US 1999-441484          19991117 (9)
DT     Utility
FS     GRANTED
LN.CNT 1510
INCL   INCLM: 435/262.000
       INCLS: 435/262.500; 423/DIG.017; 588/249.000; 588/901.000; 210/610.000;
              210/611.000
NCL    NCLM:  435/262.000
       NCLS:  210/610.000; 210/611.000; 423/DIG.017; 435/262.500; 588/249.000;
              588/901.000
IC     [7]
       ICM     B09B003-00
       IPCI    B09B0003-00 [ICM,7]
       IPCR    B09C0001-00 [I,C*]; B09C0001-08 [I,A]; B09C0001-10 [I,C*];
               B09C0001-10 [I,A]
EXF    435/262; 435/262.5; 423/DIG.17; 588/249; 588/901; 071/6; 210/610;
       210/611
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4   ANSWER 7 OF 8  USPATFULL on STN
AN     2002:171948  USPATFULL
TI     SLOW-RELEASE SOLID-CHEMICAL COMPOSITION AND METHOD FOR ANAEROBIC
       BIOREMEDIATION
IN     Hince, Eric Christian, Campbell Hall, NY, UNITED STATES
PI     US 2002090697       A1  20020711
       US 6620611          B2  20030916
AI     US 2001-755473      A1  20010106 (9)
DT     Utility
FS     APPLICATION
LN.CNT 1457
INCL   INCLM: 435/187.000
       INCLS: 435/183.000
NCL    NCLM:  435/262.500; 435/187.000
       NCLS:  210/600.000; 210/610.000; 435/176.000; 435/178.000; 435/179.000;
              435/187.000; 435/243.000; 435/252.500; 435/252.700; 435/253.300;
              435/254.220; 435/254.300; 435/183.000
IC     [7]
       ICM     C12N009-00
       ICS     C12N009-98
       IPCI    C12N0009-00 [ICM,7]; C12N0009-98 [ICS,7]
       IPCI-2 B09B0003-00 [ICM,7]; C02F0003-00 [ICS,7]; C12N0009-98 [ICS,7];
               C12N0011-10 [ICS,7]; C12N0011-12 [ICS,7]; C12N0011-00 [ICS,7,C*]
       IPCR    B09C0001-00 [I,C*]; B09C0001-00 [I,A]; B09C0001-10 [I,C*];
               B09C0001-10 [I,A]; C02F0003-34 [I,C*]; C02F0003-34 [I,A];
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              C12N0009-98 [I,C*]; C12N0009-98 [I,A]
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4   ANSWER 8 OF 8  USPATFULL on STN
AN      2002:136808  USPATFULL
TI      Method for the enhanced anaerobic bioremediation of contaminants in
        aqueous sediments and other difficult environments
IN      Hince, Eric Christian, Campbell Hall, NY, United States
PA      Geovation Consultants Inc., Florida, NY, United States (U.S.
        corporation)
PI      US 6403364          B1  20020611
AI      US 2000-493827          20000128 (9)
DT      Utility
FS      GRANTED
LN.CNT 1160
INCL    INCLM: 435/262.500
        INCLS: 435/262.000; 210/610.000; 210/747.000
NCL     NCLM:  435/262.500
        NCLS:  210/610.000; 210/747.000; 435/262.000
IC      [7]
        ICM    C12S013-00
        IPCI   C12S0013-00 [ICM,7]
        IPCR   B09C0001-10 [I,C*]; B09C0001-10 [I,A]; C12S0009-00 [I,C*];
               C12S0009-00 [I,A]
EXF     435/262; 435/262.5; 435/179; 435/264; 071/8-11; 071/64.11; 210/610;
        210/611; 210/747; 252/184; 424/468-470; 502/404; 502/518; 504/117
CAS INDEXING IS AVAILABLE FOR THIS PATENT.


=>  d hist

     (FILE 'HOME' ENTERED AT 20:49:26 ON 30 MAR 2008)

     INDEX 'ADISCTI, ADISINSIGHT, ADISNEWS, AGRICOLA, ANABSTR, ANTE, AQUALINE,
     AQUASCI, BIOENG, BIOSIS, BIOTECHABS, BIOTECHDS, BIOTECHNO, CABA, CAPLUS,
     CEABA-VTB, CIN, CONFSCI, CROPB, CROPU, DDFB, DDFU, DGENE, DISSABS, DRUGB,
     DRUGMONOG2, DRUGU, EMBAL, EMBASE, ...' ENTERED AT 20:49:48 ON 30 MAR 2008
                SEA ANAEROBIC(P)DEGRAD? AND HUMIC(P)ACID? AND ELECTRON(P)ACCEPT
               ---------
               0*  FILE ADISNEWS
               0*  FILE ANTE
               0*  FILE AQUALINE
               0*  FILE BIOENG
               0*  FILE BIOTECHABS
               0*  FILE BIOTECHDS
               0*  FILE BIOTECHNO
               1   FILE CAPLUS
               0*  FILE CEABA-VTB
               0*  FILE CIN
               1   FILE DISSABS
               0*  FILE ESBIOBASE
               0*  FILE FOMAD
               0*  FILE FOREGE
               0*  FILE FROSTI
               0*  FILE FSTA
               2   FILE IFIPAT
               0*  FILE KOSMET
               0*  FILE NTIS
               0*  FILE NUTRACEUT
               0*  FILE PASCAL
               0*  FILE PHARMAML
               8   FILE USPATFULL
```

```
                1   FILE USPAT2
                0*  FILE WATER
                1   FILE WPIDS
                1   FILE WPINDEX
L1               QUE ANAEROBIC(P) DEGRAD? AND HUMIC(P) ACID? AND ELECTRON(P) ACC
                ---------

     FILE 'CAPLUS, DISSABS, IFIPAT, USPATFULL, USPAT2' ENTERED AT 20:52:53 ON
     30 MAR 2008
L2            13 S L1
L3             9 DUP REM L2 (4 DUPLICATES REMOVED)
L4             8 S L3 AND NITR?

=> logoff
ALL L# QUERIES AND ANSWER SETS ARE DELETED AT LOGOFF
LOGOFF? (Y)/N/HOLD:y
COST IN U.S. DOLLARS                              SINCE FILE      TOTAL
                                                       ENTRY    SESSION
FULL ESTIMATED COST                                    66.37      69.83

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)        SINCE FILE      TOTAL
                                                       ENTRY    SESSION
CA SUBSCRIBER PRICE                                    -0.80      -0.80

STN INTERNATIONAL LOGOFF AT 21:00:39 ON 30 MAR 2008



Connecting via Winsock to STN




Welcome to STN International!  Enter x:x

LOGINID:ssspt189dxw

PASSWORD:
TERMINAL (ENTER 1, 2, 3, OR ?):2


* * * * * * * * * *   Welcome to STN International   * * * * * * * * * *

 NEWS  1          Web Page for STN Seminar Schedule - N. America
 NEWS  2  NOV 21  CAS patent coverage to include exemplified prophetic
                  substances identified in English-, French-, German-,
                  and Japanese-language basic patents from 2004-present
 NEWS  3  NOV 26  MARPAT enhanced with FSORT command
 NEWS  4  NOV 26  CHEMSAFE now available on STN Easy
 NEWS  5  NOV 26  Two new SET commands increase convenience of STN
                  searching
 NEWS  6  DEC 01  ChemPort single article sales feature unavailable
 NEWS  7  DEC 12  GBFULL now offers single source for full-text
                  coverage of complete UK patent families
 NEWS  8  DEC 17  Fifty-one pharmaceutical ingredients added to PS
 NEWS  9  JAN 06  The retention policy for unread STNmail messages
                  will change in 2009 for STN-Columbus and STN-Tokyo
 NEWS 10  JAN 07  WPIDS, WPINDEX, and WPIX enhanced Japanese Patent
                  Classification Data
 NEWS 11  FEB 02  Simultaneous left and right truncation (SLART) added
                  for CERAB, COMPUAB, ELCOM, and SOLIDSTATE
 NEWS 12  FEB 02  GENBANK enhanced with SET PLURALS and SET SPELLING
```

```
 NEWS 13  FEB 06  Patent sequence location (PSL) data added to USGENE
 NEWS 14  FEB 10  COMPENDEX reloaded and enhanced
 NEWS 15  FEB 11  WTEXTILES reloaded and enhanced

 NEWS EXPRESS JUNE 27 08 CURRENT WINDOWS VERSION IS V8.3,
             AND CURRENT DISCOVER FILE IS DATED 23 JUNE 2008.

 NEWS HOURS    STN Operating Hours Plus Help Desk Availability
 NEWS LOGIN    Welcome Banner and News Items
 NEWS IPC8     For general information regarding STN implementation of IPC 8

Enter NEWS followed by the item number or name to see news on that
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* * * * * * * * * * * * * * STN  Columbus  * * * * * * * * * * * * * * *

FILE 'HOME' ENTERED AT 12:10:58 ON 17 FEB 2009

=> index bioscience
FILE 'DRUGMONOG' ACCESS NOT AUTHORIZED
COST IN U.S. DOLLARS                                 SINCE FILE      TOTAL
                                                          ENTRY    SESSION
FULL ESTIMATED COST                                        0.22       0.22

INDEX 'ADISCTI, ADISINSIGHT, ADISNEWS, AGRICOLA, ANABSTR, ANTE, AQUALINE,
       AQUASCI, BIOENG, BIOSIS, BIOTECHABS, BIOTECHDS, BIOTECHNO, CABA, CAPLUS,
       CEABA-VTB, CIN, CONFSCI, CROPB, CROPU, DDFB, DDFU, DGENE, DISSABS, DRUGB,
       DRUGMONOG2, DRUGU, EMBAL, EMBASE, ...' ENTERED AT 12:11:14 ON 17 FEB 2009

68 FILES IN THE FILE LIST IN STNINDEX

Enter SET DETAIL ON to see search term postings or to view
search error messages that display as 0* with SET DETAIL OFF.

=> s humic acids and electron acceptor and anaerobic and degrad? and soil
          1   FILE BIOENG
          3   FILE BIOSIS
          1   FILE BIOTECHABS
          1   FILE BIOTECHDS
          1   FILE BIOTECHNO
          2   FILE CABA
          1   FILE CAPLUS
  25 FILES SEARCHED...
          1   FILE EMBASE
          1   FILE ESBIOBASE
          3   FILE IFIPAT
          1   FILE LIFESCI
          1   FILE PASCAL
          2   FILE SCISEARCH
  59 FILES SEARCHED...
          5   FILE USPATFULL
          3   FILE WPIDS
          3   FILE WPINDEX

  16 FILES HAVE ONE OR MORE ANSWERS,   68 FILES SEARCHED IN STNINDEX
```

```
L1   QUE HUMIC ACIDS AND ELECTRON ACCEPTOR AND ANAEROBIC AND DEGRAD? AND SOIL

=> s l1 and hydrocarbon?
          1   FILE BIOSIS
          1   FILE CAPLUS
          1   FILE IFIPAT
  44 FILES SEARCHED...
          1   FILE SCISEARCH
          5   FILE USPATFULL
          2   FILE WPIDS
          2   FILE WPINDEX

   7 FILES HAVE ONE OR MORE ANSWERS,   68 FILES SEARCHED IN STNINDEX

L2   QUE L1 AND HYDROCARBON?

=> file biosis caplus ifipat scisearch uspatfull
COST IN U.S. DOLLARS                              SINCE FILE      TOTAL
                                                       ENTRY    SESSION
FULL ESTIMATED COST                                     2.72       2.94

FILE 'BIOSIS' ENTERED AT 12:13:45 ON 17 FEB 2009
Copyright (c) 2009 The Thomson Corporation

FILE 'CAPLUS' ENTERED AT 12:13:45 ON 17 FEB 2009
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2009 AMERICAN CHEMICAL SOCIETY (ACS)

FILE 'IFIPAT' ENTERED AT 12:13:45 ON 17 FEB 2009
COPYRIGHT (C) 2009 IFI CLAIMS(R) Patent Services (IFI)

FILE 'SCISEARCH' ENTERED AT 12:13:45 ON 17 FEB 2009
Copyright (c) 2009 The Thomson Corporation

FILE 'USPATFULL' ENTERED AT 12:13:45 ON 17 FEB 2009
CA INDEXING COPYRIGHT (C) 2009 AMERICAN CHEMICAL SOCIETY (ACS)

=> s l2
L3           9 L2

=> rem dup l3
DUP IS NOT VALID HERE
The DELETE command is used to remove various items stored by the
system.

To delete a saved query, saved answer set, saved L-number list, SDI
request, batch request, mailing list, or user-defined cluster, format,
or search field, enter the name.  The name may include ?  for left,
right, or simultaneous left and right truncation.

Examples:

  DELETE BIO?/Q          - delete query names starting with BIO
  DELETE ?DRUG/A         - delete answer set names ending with DRUG
  DELETE ?ELEC?/L        - delete L-number lists containing ELEC
  DELETE ANTICOAG/S      - delete SDI request
  DELETE ENZYME/B        - delete batch request
  DELETE .MYCLUSTER      - delete user-defined cluster
  DELETE .MYFORMAT       - delete user-defined display format
  DELETE .MYFIELD        - delete user-defined search field
  DELETE NAMELIST MYLIST - delete mailing list
```

To delete an ordered document or an offline print, enter its number.

Examples:

```
  DELETE P123001C        - delete print request
  DELETE D134002C        - delete document order request
```

To delete an individual L-number or range of L-numbers, enter the L-number or L-number range. You may also enter DELETE LAST followed by a number, n, to delete the last n L-numbers. RENUMBER or NORENUMBER may also be explicitly specified to override the value of SET RENUMBER.

Examples:

```
  DELETE L21            - delete a single L-number
  DELETE L3-L6          - delete a range of L-numbers
  DELETE LAST 4         - delete the last 4 L-numbers
  DELETE L33-           - delete L33 and any higher L-number
  DELETE -L55           - delete L55 and any lower L-number
  DELETE L2-L6 RENUMBER - delete a range of L-numbers and
                          renumber remaining L-numbers
  DELETE RENUMBER       - renumber L-numbers after deletion of
                          intermediate L-numbers
```

Entire sets of saved items, SDI requests, batch requests, user-defined items, or E-numbers can be deleted.

Examples:

```
  DELETE SAVED/Q - delete all saved queries
  DELETE SAVED/A - delete all saved answer sets
  DELETE SAVED/L - delete all saved L-number lists
  DELETE SAVED   - delete all saved queries, answer sets,
                   and L-number lists
  DELETE SAVED/S - delete all SDI requests
  DELETE SAVED/B - delete all batch requests
  DELETE CLUSTER - delete all user-defined clusters
  DELETE FORMAT  - delete all user-defined display formats
  DELETE FIELD   - delete all user-defined search fields
  DELETE SELECT  - delete all E-numbers
  DELETE HISTORY - delete all L-numbers and restart the
                   session at L1
```

To delete an entire multifile SDI request, enter DELETE and the name of the request. To delete a component from the multifile SDI, enter DELETE and the name of the component.

=> rem dup l3
DUP IS NOT VALID HERE
The DELETE command is used to remove various items stored by the system.

To delete a saved query, saved answer set, saved L-number list, SDI request, batch request, mailing list, or user-defined cluster, format, or search field, enter the name. The name may include ? for left, right, or simultaneous left and right truncation.

Examples:

```
  DELETE BIO?/Q         - delete query names starting with BIO
  DELETE ?DRUG/A        - delete answer set names ending with DRUG
  DELETE ?ELEC?/L       - delete L-number lists containing ELEC
  DELETE ANTICOAG/S     - delete SDI request
  DELETE ENZYME/B       - delete batch request
  DELETE .MYCLUSTER     - delete user-defined cluster
  DELETE .MYFORMAT      - delete user-defined display format
  DELETE .MYFIELD       - delete user-defined search field
  DELETE NAMELIST MYLIST - delete mailing list
```

To delete an ordered document or an offline print, enter its number.

Examples:

```
  DELETE P123001C       - delete print request
  DELETE D134002C       - delete document order request
```

To delete an individual L-number or range of L-numbers, enter the L-number or L-number range. You may also enter DELETE LAST followed by a number, n, to delete the last n L-numbers. RENUMBER or NORENUMBER may also be explicitly specified to override the value of SET RENUMBER.

Examples:

```
  DELETE L21           - delete a single L-number
  DELETE L3-L6         - delete a range of L-numbers
  DELETE LAST 4        - delete the last 4 L-numbers
  DELETE L33-          - delete L33 and any higher L-number
  DELETE -L55          - delete L55 and any lower L-number
  DELETE L2-L6 RENUMBER - delete a range of L-numbers and
                          renumber remaining L-numbers
  DELETE RENUMBER      - renumber L-numbers after deletion of
                          intermediate L-numbers
```

Entire sets of saved items, SDI requests, batch requests, user-defined items, or E-numbers can be deleted.

Examples:

```
  DELETE SAVED/Q - delete all saved queries
  DELETE SAVED/A - delete all saved answer sets
  DELETE SAVED/L - delete all saved L-number lists
  DELETE SAVED   - delete all saved queries, answer sets,
                   and L-number lists
  DELETE SAVED/S - delete all SDI requests
  DELETE SAVED/B - delete all batch requests
  DELETE CLUSTER - delete all user-defined clusters
  DELETE FORMAT  - delete all user-defined display formats
  DELETE FIELD   - delete all user-defined search fields
  DELETE SELECT  - delete all E-numbers
  DELETE HISTORY - delete all L-numbers and restart the
                   session at L1
```

To delete an entire multifile SDI request, enter DELETE and the name of the request. To delete a component from the multifile SDI, enter DELETE and the name of the component.

```
=> dup rem l3
PROCESSING COMPLETED FOR L3
L4           6 DUP REM L3 (3 DUPLICATES REMOVED)
```

```
=> d l4 1-6

L4   ANSWER 1 OF 6  USPATFULL on STN
AN      2008:242666  USPATFULL
TI      Biogeochemical reactor
IN      Mankiewicz, Paul S., City Island, NY, UNITED STATES
PI      US 20080210629      A1  20080904
AI      US 2007-2552        A1  20071218 (12)
PRAI    US 2006-875424P     20061218 (60)
DT      Utility
FS      APPLICATION
LN.CNT 2324
INCL    INCLM: 210/610.000
        INCLS: 210/170.070
NCL     NCLM:  210/610.000
        NCLS:  210/170.070
IC      IPCI   C02F0003-02 [I,A]
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4   ANSWER 2 OF 6  IFIPAT  COPYRIGHT 2009 IFI on STN  DUPLICATE 1
AN     11217300  IFIPAT;IFIUDB;IFICDB
TI     Anaerobic biological degradation of
       hydrocarbons
IN     Ballerstedt Hendrik; Gerritse Jan; Langenhoff Alette Anna Maria;
       Rijnaarts Hubertus Henricus Martinus
PA     Unassigned Or Assigned To Individual (68000)
PPA    Nederlandse Organisatie Voor Toegepast Natuurwetenschappelijk Onderzock
Tno NL (Probable)
PI     US 20060166348  A1  20060727
AI     US 2003-527409      20030912
       WO 2003-NL632       20030912
                           20051227  PCT 371 date
                           20051227  PCT 102(e) date
PRAI   NL 2002-1021458      20020913
FI     US 20060166348      20060727
DT     Utility; Patent Application - First Publication
FS     CHEMICAL
       APPLICATION
ED     Entered STN: 27 Jul 2006
       Last Updated on STN: 27 Jul 2006
CLMN   10

L4   ANSWER 3 OF 6  USPATFULL on STN
AN      2004:53318  USPATFULL
TI      Microbial enzyme-enhanced organic-inorganic solid-chemical composition
        and methods for anaerobic bioremediation
IN      Hince, Eric Christian, Campbell Hall, NY, United States
PA      Geovation Technologies, Inc., Florida, NY, United States (U.S.
        corporation)
PI      US 6699707          B1  20040302
AI      US 2000-690395          20001017 (9)
RLI     Continuation-in-part of Ser. No. US 1999-441484, filed on 17 Nov 1999,
        now patented, Pat. No. US 6463531
DT      Utility
FS      GRANTED
LN.CNT 1476
INCL    INCLM: 435/262.000
        INCLS: 435/262.500; 071/006.000; 210/611.000; 423/DIG.017
NCL     NCLM:  435/262.000
        NCLS:  071/006.000; 210/611.000; 423/DIG.017; 435/262.500
IC      [7]
```

```
       ICM    C12N011-18
       IPCI   C12N0011-18 [ICM,7]; C12N0011-00 [ICM,7,C*]
       IPCR   B09C0001-00 [I,C*]; B09C0001-08 [I,A]; B09C0001-10 [I,C*];
              B09C0001-10 [I,A]
EXF    435/262; 435/262.5; 423/DIG.17; 588/249; 588/901; 071/6; 210/610;
       210/611
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4   ANSWER 4 OF 6  CAPLUS  COPYRIGHT 2009 ACS on STN  DUPLICATE 2
AN   2002:609922  CAPLUS
DN   137:158474
TI   Advanced inorganic solid-chemical composition and methods for
     anaerobic bioremediation
IN   Hince, Eric Christian
PA   Geovation Technologies, Inc., USA
SO   U.S., 13 pp.
     CODEN: USXXAM
DT   Patent
LA   English
FAN.CNT 1
     PATENT NO.          KIND   DATE        APPLICATION NO.        DATE
     ---------------     ----   --------    --------------------   --------
PI   US 6432693           B1    20020813    US 1999-439698         19991115
PRAI US 1999-439698             19991115
RE.CNT  22     THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD
               ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4   ANSWER 5 OF 6  USPATFULL on STN
AN     2002:181553  USPATFULL
TI     Advanced organic-inorganic solid-chemical composition and methods for
       anaerobic bioremediation
IN     Hince, Eric Christian, Campbell Hall, NY, United States
       Singer, Jennifer Ann, Goshen, NY, United States
PA     Geovation Technologies, Inc., Florida, NY, United States (U.S.
       corporation)
PI     US 6423531          B1  20020723
AI     US 1999-441484          19991117 (9)
DT     Utility
FS     GRANTED
LN.CNT 1510
INCL   INCLM: 435/262.000
       INCLS: 435/262.500; 423/DIG.017; 588/249.000; 588/901.000; 210/610.000;
              210/611.000
NCL    NCLM:  435/262.000
       NCLS:  210/610.000; 210/611.000; 423/DIG.017; 435/262.500; 588/249.000;
              588/901.000
IC     [7]
       ICM    B09B003-00
       IPCI   B09B0003-00 [ICM,7]
       IPCR   B09C0001-00 [I,C*]; B09C0001-08 [I,A]; B09C0001-10 [I,C*];
              B09C0001-10 [I,A]
EXF    435/262; 435/262.5; 423/DIG.17; 588/249; 588/901; 071/6; 210/610;
       210/611
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L4   ANSWER 6 OF 6  BIOSIS  COPYRIGHT (c) 2009 The Thomson Corporation  on STN
     DUPLICATE 3
AN   2001:522467  BIOSIS
DN   PREV200100522467
TI   Anaerobic mineralization of toluene by enriched sediments with
     quinones and humus as terminal electron acceptors.
AU   Cervantes, Francisco J. [Reprint author]; Dijksma, Wouter; Duong-Dac,
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L4 ANSWER 1 OF 6 USPATFULL on STN
AB A new and improved in situ biogeochemical reactor, methods for constructing such reactors, and methods for using such reactors, for biodegradation, detoxification and mineralization of toxic organic and inorganic compounds, especially dioxins, in contaminated geologic settings, such as waterways is disclosed. The system includes both an anaerobic component and an aerobic component that are coupled to each other. The system is enriched with carbon, nutrients and growth factors in sufficient amounts to establish a full spectrum oxidation-reduction gradient thereby enabling, promoting and providing indigenous microbial populations to biodegrade, detoxify, and mineralize toxic organic and inorganic compounds in a contaminated geological site.

L4 ANSWER 2 OF 6 IFIPAT COPYRIGHT 2009 IFI on STN DUPLICATE 1
AB The invention relates to a method for the anaerobic biological degradation of aromatic hydrocarbons (in particular benzene), and to a specific mixture and the use thereof for this degradation. According to the invention, the anaerobic biological degradation of aromatic hydrocarbons present at a contaminated location is stimulated and stabilized by the use of a combination of humic acids and/or anthraquinone-2,6disulfate and nitrate, which is added to anaerobic bacterial populations.

L4 ANSWER 3 OF 6 USPATFULL on STN
AB The present invention discloses the formulation and use of an advanced solid-media chemical composition which includes both plant-derived and inorganic components which is designed and intended to enhance the removal of a broad range of recalcitrant organic and inorganic contaminants in the environment by providing an improved means of promoting the anaerobic, biologically mediated degradation, transformation, and/or detoxification of the contaminants which may be present in solid and liquid wastes, soils, sediments, and water bodies. The invention provides for improved means of (i) promoting the solid-phase extraction, absorption, and adsorbtion of recalcitrant contaminants from contaminated media, (ii) creating, enhancing, and maintaining anaerobic and highly reducing conditions (i.e., negative Eh values); (iii) providing sources of carbonaceous co-substrates, inorganic, and organic anaerobic electron acceptors, and organic and inorganic nutrients to promote the growth of contaminant-degrading microorganisms, and (iv) providing sources of inoculum of naturally occurring microorganisms which act to promote the biodegradation of contaminants. Additional forms, means, and methods for the production and use of the disclosed solid-chemical composition are also provided to provide additional advantages and to enhance other advantages provided by the composition and/or the components thereof.

L4 ANSWER 4 OF 6 CAPLUS COPYRIGHT 2009 ACS on STN DUPLICATE 2

AB The present invention discloses the formulation and use of an advanced inorg. solid-media chemical composition designed and intended to enhance the removal of a broad range of contaminants in the environment by provided an improved means of promoting the anaerobic, biol. mediated degradation, transformation, and/or detoxification of the contaminants which may be present in industrial and/or hazardous liquid and solid wastes, and contaminated environmental media such as soils, sediments, groundwaters and surface water bodies. The disclosed inorg. chemical composition of the present invention provides improved means of: (1) promoting and enhancing the biogeochem. reactivity of recalcitrant contaminants in contaminated media; (2) creating, enhancing, and maintaining anaerobic and strongly reducing conditions (i.e., highly neg. Eh values); (3) providing a source of inorg. electron acceptors, nutrients, surfactants, and chelating and/or acidifying agents to promote the growth of anaerobic contaminant-degrading microorganisms; and (4) providing sources of inoculum of naturally occurring microorganisms which act to promote the biodegrdn. of contaminants. The solid-chemical composition of the present invention provides multiple inorg. sources of electrons, electron acceptors, substrates, nutrients, and inoculum for anaerobic, metal-reducing bacteria such as Geobacter spp., Geovibrio spp., Pelobacter spp., Shewanella spp., Pseudomonas spp., Achromobacter spp., Aeromonas spp., Bacillus spp., Enterobacter spp., Desulfuromonas spp., Desulfovibrio spp., Micrococcus spp., and other microorganisms capable of iron reduction, manganese reduction, and the reduction of other metals. The principles of this invention provide for the relatively rapid and cost-effective anaerobic, biol. mediated decontamination of halogenated solvents; other recalcitrant halogenated organic compds. such as DDT, toxaphene, PCBs, dioxins, and the like; arsenic-based pesticides; and recalcitrant inorg. contaminants such as cyanides, hexavalent chromium, the oxidized forms of other toxic transition metals, and the like.

L4 ANSWER 5 OF 6 USPATFULL on STN

AB The present invention discloses the formulation and use of an advanced solid-media chemical composition which includes both plant-derived and inorganic components which is designed and intended to enhance the removal of a broad range of recalcitrant organic and inorganic contaminants in the environment by provided an improved means of promoting the anaerobic, biologically mediated degradation, transformation, and/or detoxification of the contaminants which may be present in solid and liquid wastes, soils, sediments, and water bodies. The invention provides for improved means of (i) promoting the solid-phase extraction, absorption and adsorbtion of recalcitrant contaminants from contaminated media, (ii) creating, enhancing, and maintaining anaerobic and highly reducing conditions (i.e., negative Eh values), (iii) providing a sources of carbonaceous co-substrates, inorganic and organic anaerobic electron acceptors, and organic and inorganic nutrients to promote the growth of contaminant-degrading microorganisms, and (iv) providing sources of inoculum of naturally occurring microorganisms which act to promote the biodegradation of contaminants. Additional forms, means and methods for the production and use of the disclosed solid-chemical composition are also provided to provide additional advantages and to enhance other advantages provided by the composition and/or the components thereof.

L4 ANSWER 6 OF 6 BIOSIS COPYRIGHT (c) 2009 The Thomson Corporation on STN DUPLICATE 3

AB The anaerobic microbial oxidation of toluene to CO2 coupled to humus respiration was demonstrated by use of enriched anaerobic sediments from the Amsterdam petroleum harbor (APH) and the Rhine River. Both highly purified soil humic acids (HPSHA) and the humic quinone moiety model compound anthraquinone-2,6-disulfonate (AQDS) were utilized as terminal electron acceptors. After 2 weeks of incubation, 50 and 85% of added uniformly labeled (13C) toluene were recovered as 13CO2 in HPSHA- and AQDS-supplemented APH sediment enrichment cultures, respectively; negligible recovery occurred in unsupplemented cultures. The conversion of (13C)toluene agreed with the high level of recovery of electrons as reduced humus or as anthrahydroquinone-2,6-disulfonate. APH sediment was also able to use nitrate and amorphous manganese dioxide as terminal electron acceptors to support the anaerobic biodegradation of toluene. The addition of substoichiometric amounts of humic acids to bioassay reaction mixtures containing amorphous ferric oxyhydroxide as a terminal electron acceptor led to more than 65% conversion of toluene (1 mM) after 11 weeks of incubation, a result which paralleled the partial recovery of electron equivalents as acid-extractable Fe(II). Negligible conversion of toluene and reduction of Fe(III) occurred in these bioassay reaction mixtures when humic acids were omitted. The present study provides clear quantitative evidence for the mineralization of an aromatic hydrocarbon by humus-respiring microorganisms. The results indicate that humic substances may significantly contribute to the intrinsic bioremediation of anaerobic sites contaminated with priority pollutants by serving as terminal electron acceptors.

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